

U.S. Patent Application Serial No. 10/699,836
Amendment filed June 10, 2007
Reply to OA dated February 23, 2007

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): An actuator for use in a pickup device, which moves a lens holder holding an outer peripheral portion of an objective lens and defining a lens attachment surface thereon, wherein an adhesive layer is formed between the outer peripheral portion of the objective lens and ~~the lens holder~~ the lens attachment surface, the adhesive layer having a thickness dimension which is sufficient enough to absorb deformation of the lens holder when the lens holder is deformed due to resonance, the outer peripheral portion of the objective lens and the lens holder being spaced apart by the adhesive layer on the entirety of the outer peripheral portion of the objective lens.

Claim 2 (Canceled)

Claim 3 (Original): The actuator for use in a pickup device, according to claim 1, wherein the adhesive layer is formed by filling an adhesive agent between the outer peripheral portion of the objective lens and the lens holder.

Claim 4 (Canceled)

Claim 5 (Canceled)

Claim 6 (Currently Amended): An actuator for use in a pickup device, which moves a lens holder holding an outer peripheral portion of an objective lens by means of an electromagnetic drive, wherein

the outer peripheral portion of the objective lens and the lens holder are provided, maintaining a predetermined clearance between each other,

an adhesive agent is provided in the clearance, and

a resonance frequency f of the objective lens is set higher than a predetermined servo band to be applied to drive the electromagnetic drive, and lower than a resonance frequency of the lens holder, the resonance frequency f of the objective lens being obtained by an expression:

$$f = \sqrt{\frac{k}{m}}$$

where k is a spring constant of the adhesive agent and m is mass of the objective lens,

wherein the entire circumference of the outer peripheral portion of the objective lens is provided with a clearance.

Claim 7 (Currently Amended): An actuator for a pickup device, comprising:

a lens holder having a mounting hole for holding an objective lens;

an electromagnetic drive for moving the lens holder;

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a ring-shaped recess provided on an outer periphery of the mounting hole, the recess defining a lens attachment surface thereon;

a ~~projection~~ plurality of projections provided on the recess and spaced apart from each other along the circumferential direction of the objective lens to be in contact with an outer periphery of the objective lens; and

an adhesive layer formed between the outer peripheral portion of the objective lens and the lens ~~holder~~ attachment surface, the outer peripheral portion of the objective lens being supported by the projections.

Claim 8 (Previously Presented): The actuator according to claim 7, wherein the thickness of the adhesive layer is 100 μ m or more.

Claim 9 (New): The actuator according to claim 1, wherein the adhesive layer is flexible.

Claim 10 (New): The actuator according to claim 7, wherein the adhesive layer is flexible.

Claim 11 (New): The actuator for use in a pickup device according to claim 7, wherein the projection is formed integrally on the lens holder.

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Claim 12 (New): The actuator for use in a pickup device according to claim 11, wherein the projection is provided at each of three positions maintaining a substantially equal interval between each other.